Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A <u>computer program product embodied in a computer-readable medium and comprising codes that, when executed, cause a computer to perform a</u> template matching method of detecting the position of an image region similar to a template image region from ~~on~~ a reference image, <u>said method</u> comprising <u>the steps of</u>:

calculating the similarity of the image region to the template image region at rough position intervals;

estimating the similarity at a position, where the similarity is not calculated, making use of the directional gradients of similarity obtained independently in a plurality of directions from the calculated values of similarity; ~~and~~

determining the position having a small calculated or estimated value of the similarity as the position of the similar image region<u>; and</u>

<u>restricting the value range of the estimated similarity value such that a difference between the estimated similarity value and the similarity of a periphery used for the estimation or the gradient of the similarity does not exceed a threshold value.</u>

2.   (Canceled).

3.   (Currently Amended) A <u>computer program product embodied in a computer-readable medium and comprising codes that, when executed, cause a computer to perform a</u> template matching method of narrowing down the position of a similar image region stepwise based on a multistep search method, comprising detecting the position of the similar image region by ~~the template matching method~~ <u>executing the computer program product</u> according to claim 1 at a search step before the final step thereof.

4.   (Canceled).

5.   (Currently Amended) A ~~template matching method~~ <u>computer program product embodied in a computer-readable medium</u> according to claim 4, further comprising <u>a</u>

step of determining the threshold value based on the magnitude of the similarity calculated from the template image region and an image region, which is obtained by moving the template image region in the same direction as or in the opposite direction to an estimation direction vector obtained by subtracting the position of the nearby image region from the position where the similarity is estimated.

6.   (Currently Amended) A ~~template matching method~~ computer program product embodied in a computer-readable medium according to claim 1, further comprising a step of estimating, when five reference image regions A, B, C, D, E are sequentially located on a straight line, the degree of similarity at the position C from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions A, B and from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions D, E in the estimation of the degree of similarity.

7.   (Currently Amended) A template matching apparatus for detecting the position of an image region similar to a template image region ~~from~~ on a reference image, comprising:

means for calculating the similarity of the image region to the template image region at rough position intervals;

means for estimating the similarity at a position, where the similarity is not calculated, making use of the gradients of the similarity obtained independently in a plurality of directions from the calculated values of similarity; and

means for determining the position having a small calculated or estimated value of the similarity as the position of the similar image region; and

means for restricting the value range of the estimated similarity value such that a difference between the estimated similarity value and the similarity of a periphery used for the estimation or the gradient of the similarity does not exceed a threshold value.

8.   (Canceled).

9.   (Previously Presented) A template matching apparatus for narrowing down the position of a similar image region stepwise based on a multistep search method, further

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comprising detecting the position of the similar image region by the template matching apparatus according to claim 7 at a search step before the final step thereof.

10.   (Canceled).

11.   (Currently Amended) A template matching method according to claim [[10]] 7, further comprising means for determining the threshold value based on the magnitude of the similarity calculated from the template image region and an image region, which is obtained by moving the template image region in the same direction as or in the opposite direction to an estimation direction vector obtained by subtracting the position of the nearby image region from the position where the degree of similarity is estimated.

12.   (Currently Amended) A template matching method according to claim 7, further comprising means for estimating, when five reference image regions A, B, C, D, E are sequentially located on a straight line, the degree of similarity at the position C from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions A, B and from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions D, E in the estimation of the degree of similarity.

13.   (Currently Amended) A computer readable recording medium that records a program for causing a computer to execute a template matching method of detecting the position of an image region similar to a template image region from on a reference image, wherein:

the method calculates the similarity of the image region to the template image region at rough position intervals;

the method estimates the similarity at a position, where the similarity is not calculated, making use of the gradients of similarity obtained independently in a plurality of directions from the calculated values of similarity; and

the method determines the position having a small calculated or estimated value of the similarity as the position of the similar image region; and

the method restricts the value range of the estimated similarity value such that a difference between the estimated similarity value and the similarity of a periphery used for the estimation or the gradient of the similarity does not exceed a threshold value.

14.   (Canceled).

15.   (Previously Presented) A computer readable recording medium that records a program for causing a computer to execute a template matching method of narrowing down the position of a similar image region stepwise based on a multistep search method, characterized in that the template matching method detects the position of the similar image region by being executed by a computer based on a program recorded on the recording medium according to claim 13 at a search step before the final step thereof.

16.   (Canceled).

17.   (Currently Amended) A recording medium according to claim [[16]] 13, wherein the method determines the threshold value based on the magnitude of the similarity calculated from the template image region and an image region, which is obtained by moving the template image region in the same direction as or in the opposite direction to an estimation direction vector obtained by subtracting the position of the nearby image region from the position where the degree of similarity is estimated.

18.   (Previously Presented) A recording medium according to claim 13, wherein the method estimates, when five reference image regions A, B, C, D, E are sequentially located on a straight line, the degree of similarity at the position C from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions A, B and from an interpolation value extrapolated assuming gradient continuity from the similarity in the image regions D, E in the estimation of the degree of similarity.